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# Acquisition Considerations for ADL: Impacts on CONOPS and Instructional Development

IFEST - August 4, 2011

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# Agenda – A Life Cycle Theme



## **Supporting the Production, Management and Delivery of Distributed Learning Content (DLC)**

- Background analysis – drivers for integrated DLC
- Data management and training references in OSD policies
- The Bridge Project – addressing gaps in DLC production, management and delivery
- A CONOPS for integrated DLC production and management
- Instructional development implications in an integrated DLC CONOPS

# Background Analysis by the Numbers:

## *Drivers for Integrated DLC Development and Management*

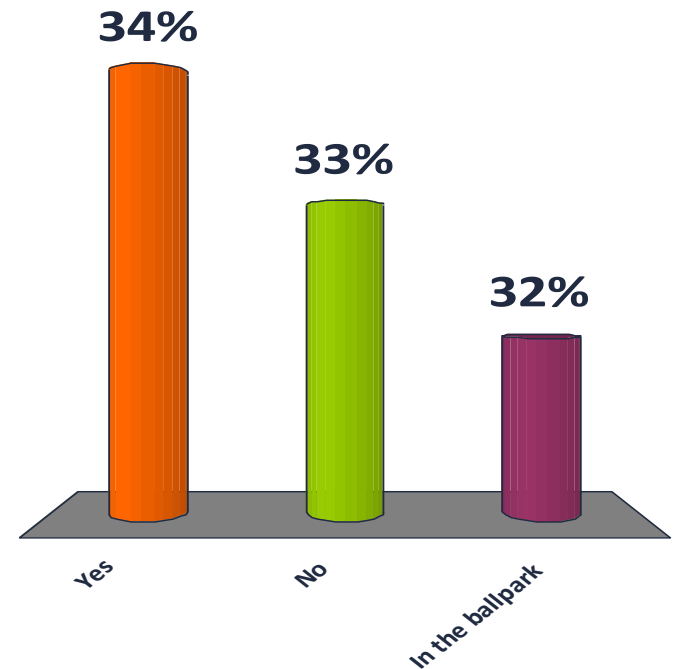
***Drivers >>>***

## ***A Quantitative Fact Supporting the Need for Integrated DLC Development and Management***

“Of the 408 projects submitted for Computer-Based Training and PC-Simulation Maintenance, **two-thirds** reported the primary reason for the maintenance request was due to equipment or publication changes. Better integration of technical information with training would alleviate some of this rework.” (Author on next slide)

**Survey Question: In your organization, or in organization you are familiar with, are two-thirds of your curriculum changes based on equipment or other system changes?**

1. Yes
2. No
3. In the ballpark



## **Source :**

- *Computer-Based Training & Personal Computer-Simulation Prioritization and Cost Estimation Assessment for NETC COO Supporting FY10/11 Spend Plan and POM12 Submittal (NETC 2009)*

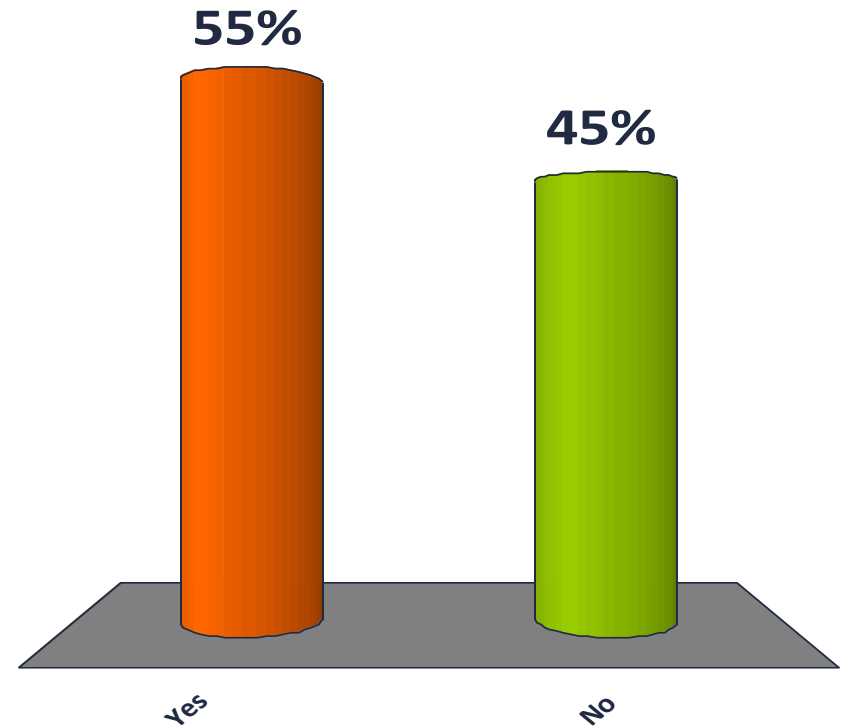
## ***A Recommendation Supporting the Need for Integrated DLC Development and Life-Cycle Management***

“Establish a centrally managed governance for courseware development, life cycle management and content development, to include streamlined contracting procedures, front-end analysis, instructional design, content quality assurance, and standardized management processes.”

*Naval Inspector General Report to the Secretary of the Navy:  
Computer-based Training (2009)*

# Survey: Should ADL collaborate with the services to establish the above recommendations?

1. Yes
2. No





# **A Quick Peak:**

## **What OSD Acquisition Policies Say About Data Management and Training**

***Drivers >>> Policies >>>***



# As-Is “Data Management” References in 5000.02



- **Section 5, Technology Development Phase (Milestone A)**
  - Para 7 - “Technical Development Strategy” shall include a *data management strategy*.
- **Section 8, Operations and Support Phase (Milestone C)**
  - Life-cycle sustainment considerations include supply; maintenance; transportation; sustaining engineering; *data management*; configuration management; *HSI*
- **Enclosure 12 “Data Management and Technical Data Rights”**
  - “Program Managers for ACAT I and II programs, regardless of planned sustainment approach, *shall assess the long-term technical data needs of their systems and reflect that assessment in a Data Management Strategy (DMS).*”



# As-Is “*Training*” References in System Acq Policy (5000.02)



- Enc 2 – Procedures
  - Section 8 - Operations and Support Phase
  - C – Phase Description , (1) Life Cycle Sustainment
    - Optimize Operational Readiness:
      - (a) Human-factors engineering to design systems that require minimal manpower; **provide effective training;** can be operated and maintained by users.
- Enc 6 - Integrated Testing and Evaluation Planning
  - Section 2 - Planning Requirements
    - (3) Test planning and conduct shall take full advantage of existing investment in DoD ranges, facilities, and other resources. **Embedded instrumentation shall be designed and developed to facilitate training,** logistics support...



# As-Is “Training” References in System Acq Policy (5000.02)



- Enc E - Human Systems Integration Planning
  - (e) Training
    - The PM shall develop training system plans to maximize the use of new learning techniques, simulation technology, **embedded training and distributed learning (DoD Instruction 1322.26 (Reference (be)))**, and instrumentation systems that provide “anytime, anyplace” training and reduce the demand on the training establishment.



# As-Is State for Data Mgt Guidelines in 5000.02



- Very high level
- No specific “how to” guidance on:
  - data management techniques.
  - training development techniques.
    - Front-end analysis
    - Reuse



## 1322.26 - Development, Management, and Delivery of Distributed Learning



- 5.4. The Heads of the DoD Components shall:
  - 5.4.1. Develop and implement regulations and procedures for developing, managing, and delivering distributed learning consistent with this Instruction and other applicable DoD Directives.
  - 5.4.2. Support the other DoD Components in sharing, exchanging, and reusing distributed learning content.
  - 5.4.3. ***Provide life-cycle management for distributed learning content.***



# As-Is State for Data Mgt Direction in 1322.26



- No specific guidance on how to implement life cycle management for DLC.



# As-Is “Data Management” References in the *Defense Acquisition Guidebook*



- 5.1.2.1 – Key Program Documents
  - Acquisition Strategy – “...it should address how the **product support package** required to support the materiel management, distribution, technical data management, support equipment, maintenance, **training**, configuration management, engineering support, supply support, and failure reporting/analysis, functions will be acquired.”





# As-Is “Training” References in the DAG



- 5.1.6.2. Data and Software Requirements and Contractor’s Assertions Lists
  - Specific CDRL items intended to convey *form, fit, and function* data or that are intended to provide operating, maintenance and ***training data (such as technical manuals)*** should be identified as such.



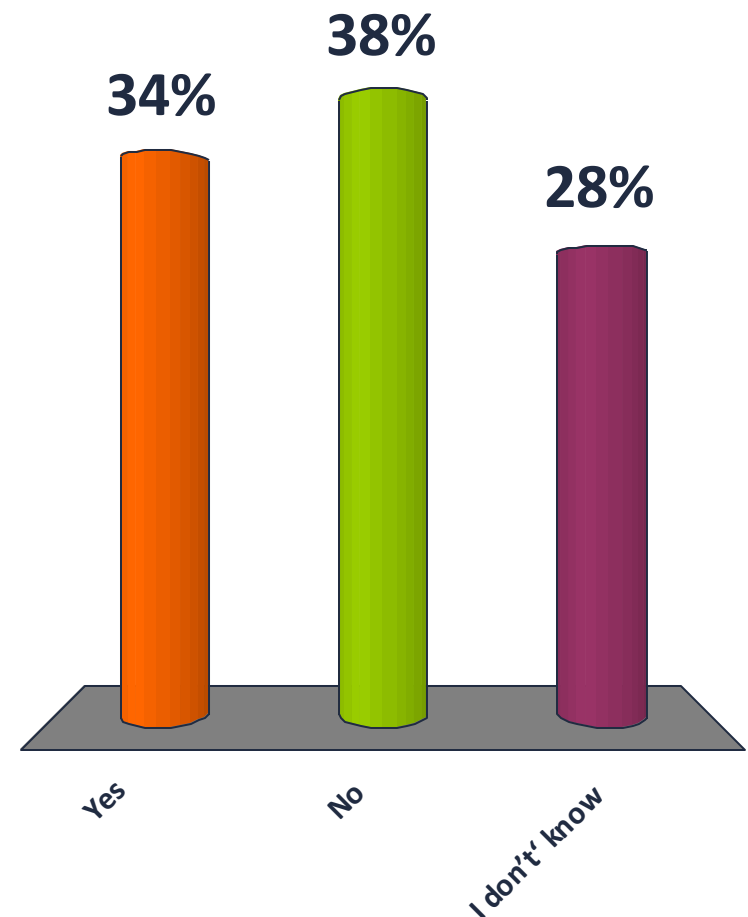
# As-Is “Training” References in the DAG



- 5.4.2.2.1. Initial Life-Cycle Sustainment Plan
  - Supportability Analysis Process – “Training and HSI requirements, including the ***training requirements/objectives (for both operator and maintenance training) relative to training courses, materials, and training equipment*** to enable personnel to effectively perform tasks supporting the CONOPS and the maintenance concept.

# SURVEY: Have you knowingly participated in a supportability analysis process for maintenance training requirements development?

1. Yes
2. No
3. I don't know





# S1000D Reference in the DAG



- 4.2.3.1.7.1. Data Acquisition
- Data acquisition encompasses ***all activities*** that create, obtain, or access data from internal or external sources to satisfy data requirements driven by the data strategy. ***When at all possible, data should be acquired in a structured format that is independent of the method of access or delivery and defined by or based on open standards.***
- Consider the following standards for defining the structure of digital data:
  - ISO 10303, Standard for the Exchange of Product Model Data (STEP)
  - Object Management Group (OMG) Systems Modeling Language (SysML), (<http://www.omgsysml.org/>)
  - **S1000D International Specification for Technical Publications Utilizing a Common Source Database** (<http://www.s1000d.org/>)

## What is S1000D?

An international specification for the procurement and production of technical publications. It is an XML specification for preparing, managing, and using equipment maintenance and operations information.

**Structured markup for training is provided. For example...**

```
<lcTaskItem>
```

```
<description>
```

```
<para>Describe the Sharable Content Object (SCO) concept, and  
identify the three defining characteristics of a SCO.</para>
```

```
</description>
```

```
</lcTaskItem>
```

**ADL – S1000D Council  
Memorandum of  
Understanding**

**Signed March, 2011**

- **Who signed the MOU:**

- Aerospace and Defense Industries of Europe (ASD)
- The Aerospace Industries Association (AIA)
- The Air Transport Association (ATA)
- Advanced Distributed Learning (ADL)

- **Main MOU Points:**

- Continued refinement of technical training support in S1000D.
- Continued harmonization of S1000D and SCORM that leads to data readiness and learning content management cost savings.



# As-Is State for DAG



- Training is included in technical data packages
- “Training data” analogous to “technical manuals”.
- S1000D is called out for consideration as a structure for digital data.





**Supporting the Production, Management and Delivery of  
Distributed Learning Content:**

**Making Alignments to 5000.02, 1322.26 and the Defense  
Acquisition Guidebook**

( ADL Insights Announcement about Bridge Project distributed June 6:

[http://ymlp.com/zK5nbq\\_](http://ymlp.com/zK5nbq_) )

***Drivers >>> Policy >>> Project***



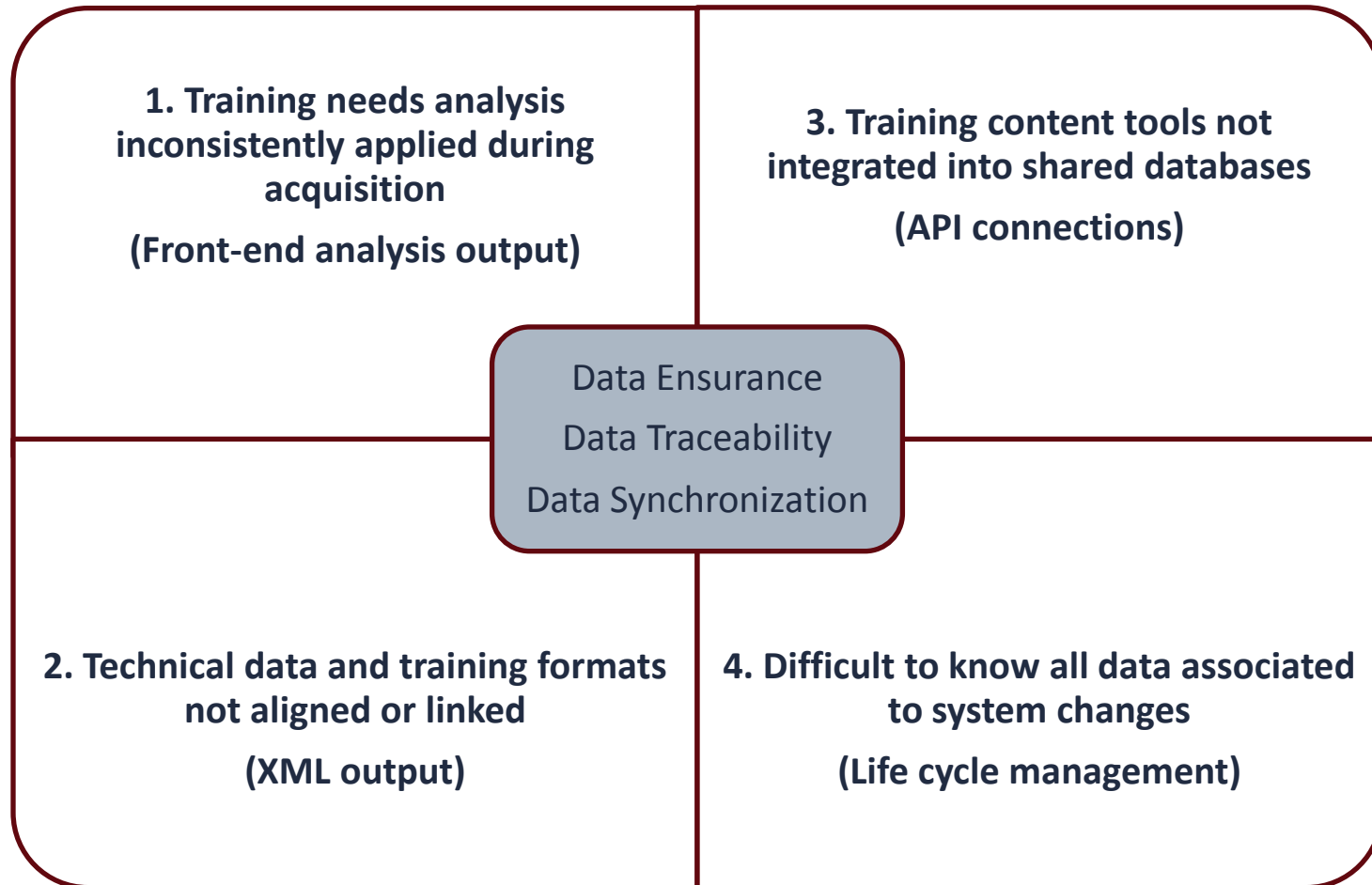
# Goal



- **Bridge Project:**
  - Acquisition guidance and policy offers general principles for enterprise DLC management
  - Bridge project fills the policy implementation gaps for DLC management



# DLC Problem Statements Driving the Bridge Project





# Bridge API



- **S1000D Bridge Application Programming Interface (API) (CONNECTIONS)**
  - Enables training development tools access to repositories (CSDBs).
- Specified web service-based communication protocol
  - Expose a set of standard communication protocols for interface a content authoring tool with a common source database
  - Any application needing access to S1000D data – our focus has been learning content authoring tools
- Pursuing submission to OASIS



# S1000D Learning Content Authoring



- **S1000D Learning Content Editor: AIM and SCO Workbench (AUTHORING)**
  - Enables courseware planning and organization in S1000D
    - Courseware training plans
    - Courseware content
    - Courseware assessments



# S1000D Transformation Toolkit



- Open source S1000D Transformation Toolkit
- Current transformation support
  - S1000D assets to SCORM 2004 3<sup>rd</sup> Edition Content Packages
  - S1000D to Mobile Platform (Android, iOS)
  - S1000D to PDF
  - Documentation
- **Status**
  - Code and documentation available on SourceForge ( <http://s1000d-scorm.sourceforge.net> )
  - Mobile S1000D Bike Course available at <http://s1000d-scorm.adlnet.gov/JQueryMobileTest3/>



# S1000D Product Data Identification Service



- **S1000D Product Data Identification Service (MAINTENANCE)**
  - Identifies all data in a repository linked to a system change proposal
  - Ability to select any node for targeted data analysis
  - Able to manage tech and training data concurrently
- Location:  
<http://sourceforge.net/projects/s1000dscorm-lcs/>

# **Integrated DLC Life Cycle Management**

## **A Concept of Operations**

***Drivers >>> Policy >>> Project >>> CONOPS***

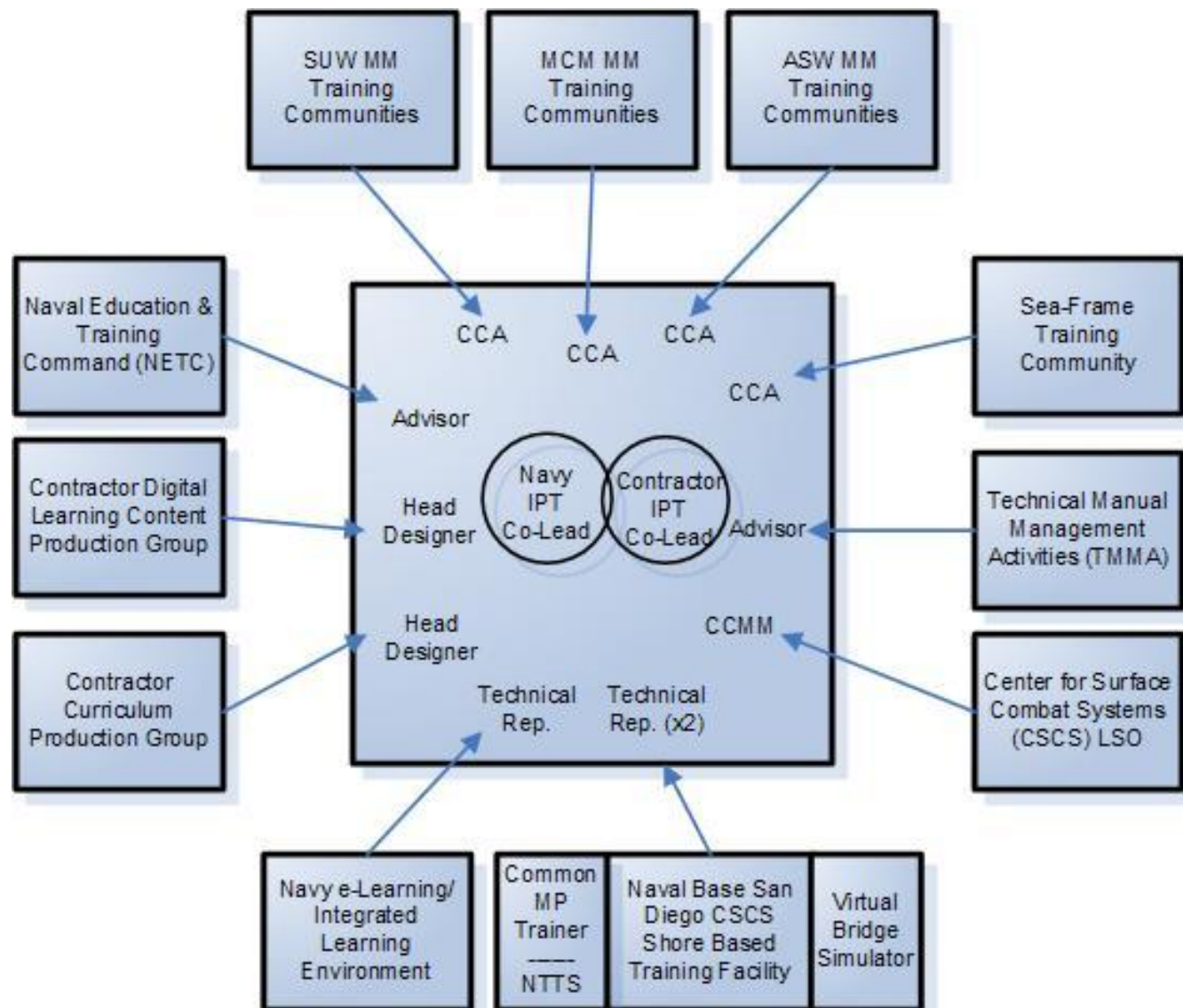


- A practical framework of measureable DLC contract requirements and discrete tasks
- Provides programs with a model for using the S1000D Bridge Tool Set by showing “how to”...
  - Seamlessly connect training development tools to a common technical data environment
  - Set up and export CBT content packages containing training content and its authoritative technical data (if desired)
  - Efficiently survey a common source database for outdated technical data and training content

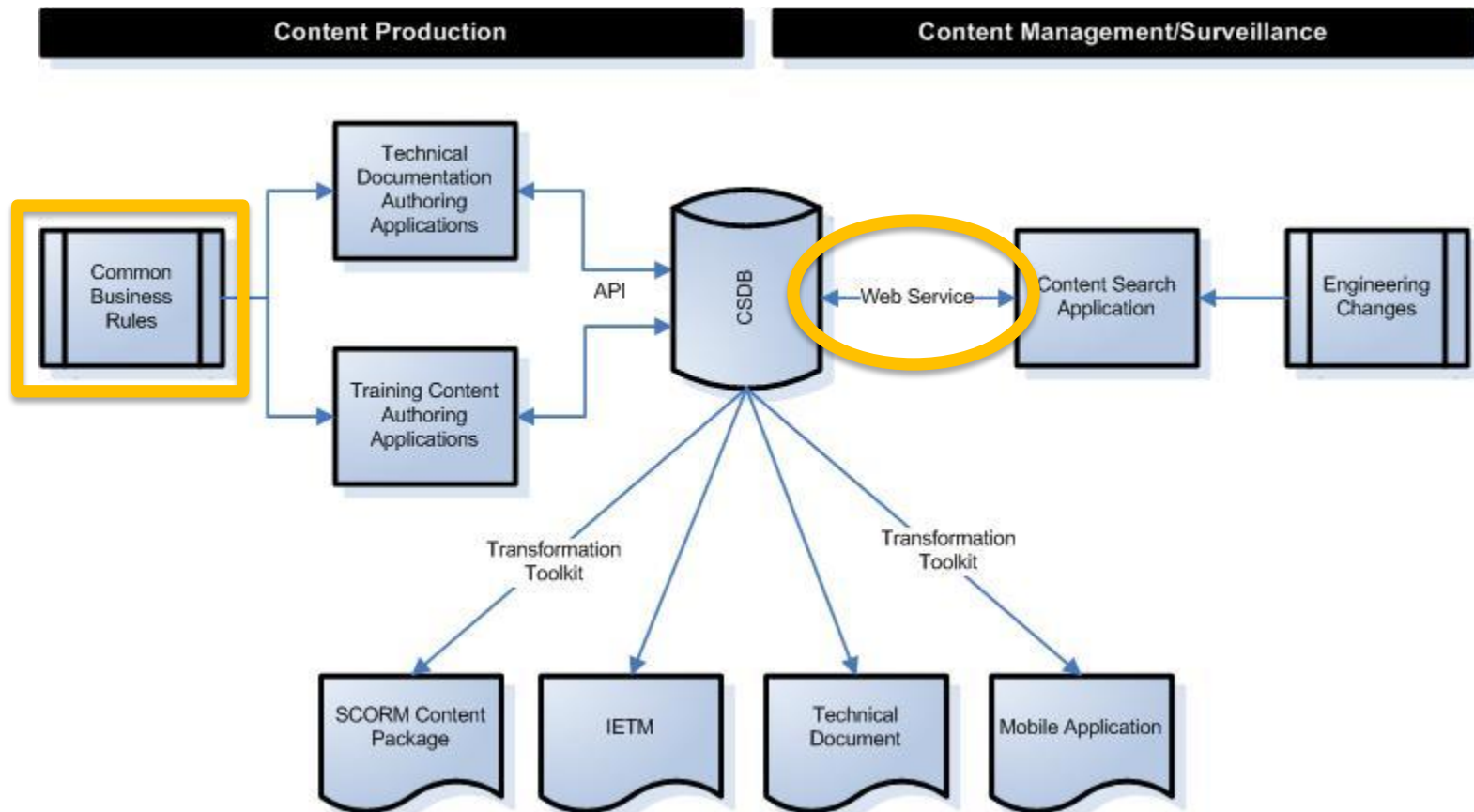
**CONOPS: Shared services and products to share and reduce costs.**

- New requirements and business rules, beyond the S1000D Bridge Tool Set are needed, to succeed
- Key contractual/SOW requirements:
  - Centralized CSDB with remote/logged-in developers
  - S1000D Issue 4.0
  - Joint Technical Documentation and Training IPT

# JTD&T IPT Example: Navy LCS Program



- Key Business Rules to integrate content production activities
- Examples include:
  - Common media object naming conventions
  - Common metadata dictionary
  - Standard methods of content surveillance (web service assists)

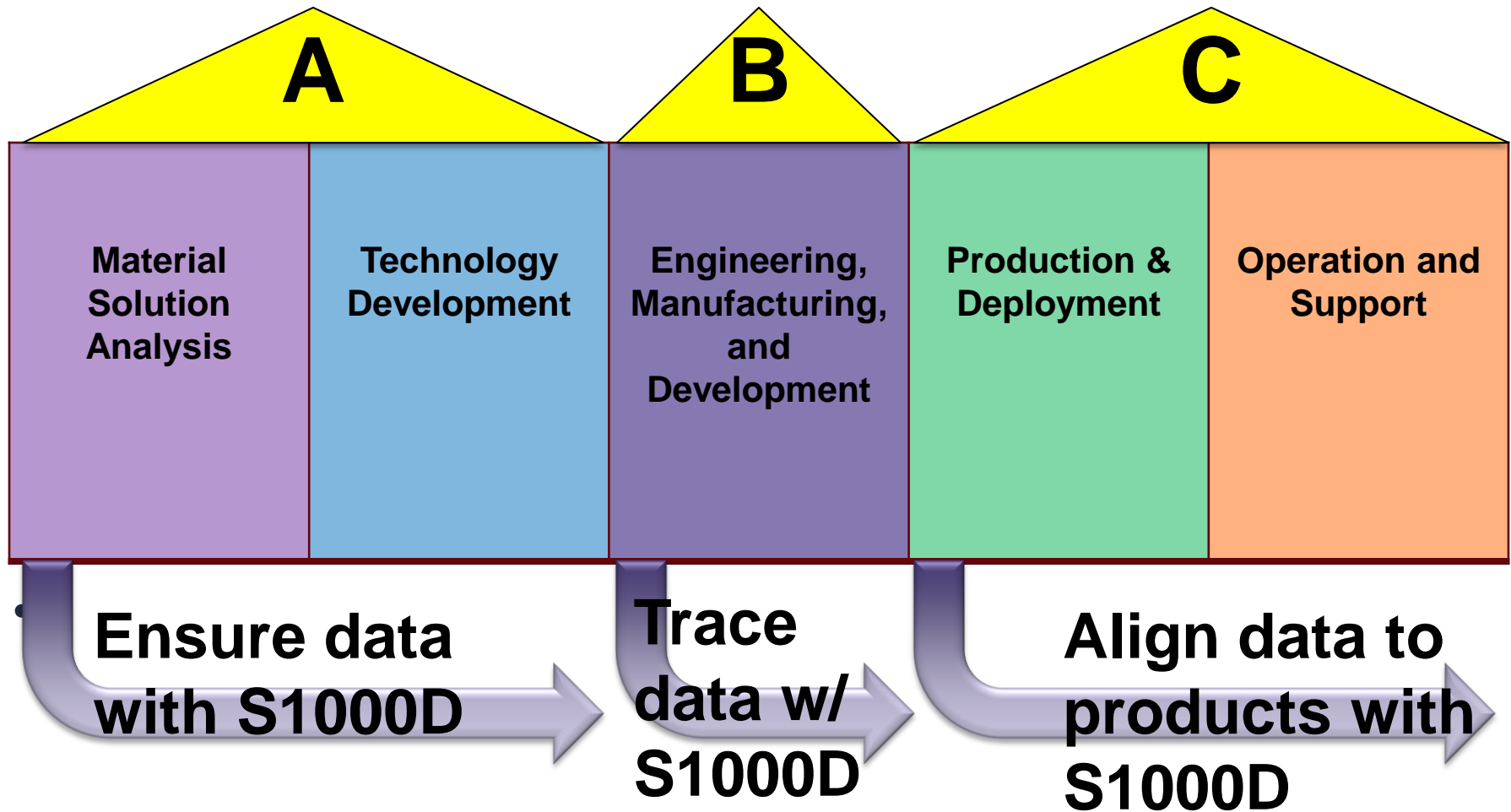


- Implementation of new requirements, business rules and S1000D Bridge Tool Set illustrated by CONOPS operational scenarios
  - **Operational Scenario 1: *Initial Analysis and Development***  
(new program or acquisition developing new technical documentation and training content)
  - **Operational Scenario 2: *Post-Validation Revisions***  
(updating initial or draft technical documentation and training content after system validation/verification and course piloting)
  - **Operational Scenario 3: *Surveillance and Maintenance***  
(life-cycle maintenance of technical documentation and training content as system changes or new training requirements occur)

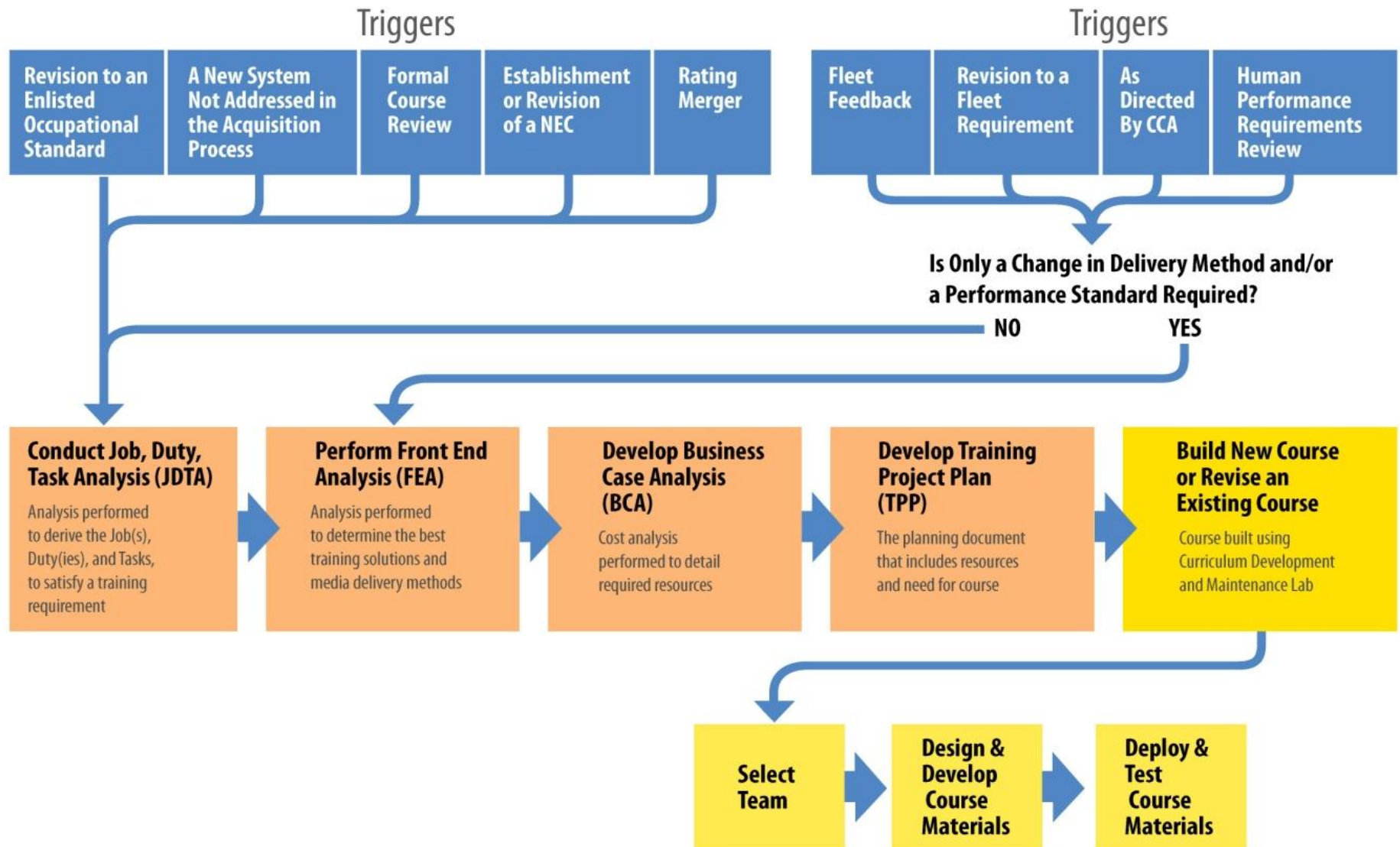
# How does the Bridge CONOPS influence instructional design strategies?

*Drivers >>> Policy >>> Project >>> CONOPS >>> ISD*

Existing Integrated Defense Acquisition, Technology,  
and Logistics Life Cycle Management System ... *still applies!*



# Existing Instructional Design Process ... *still applies!*

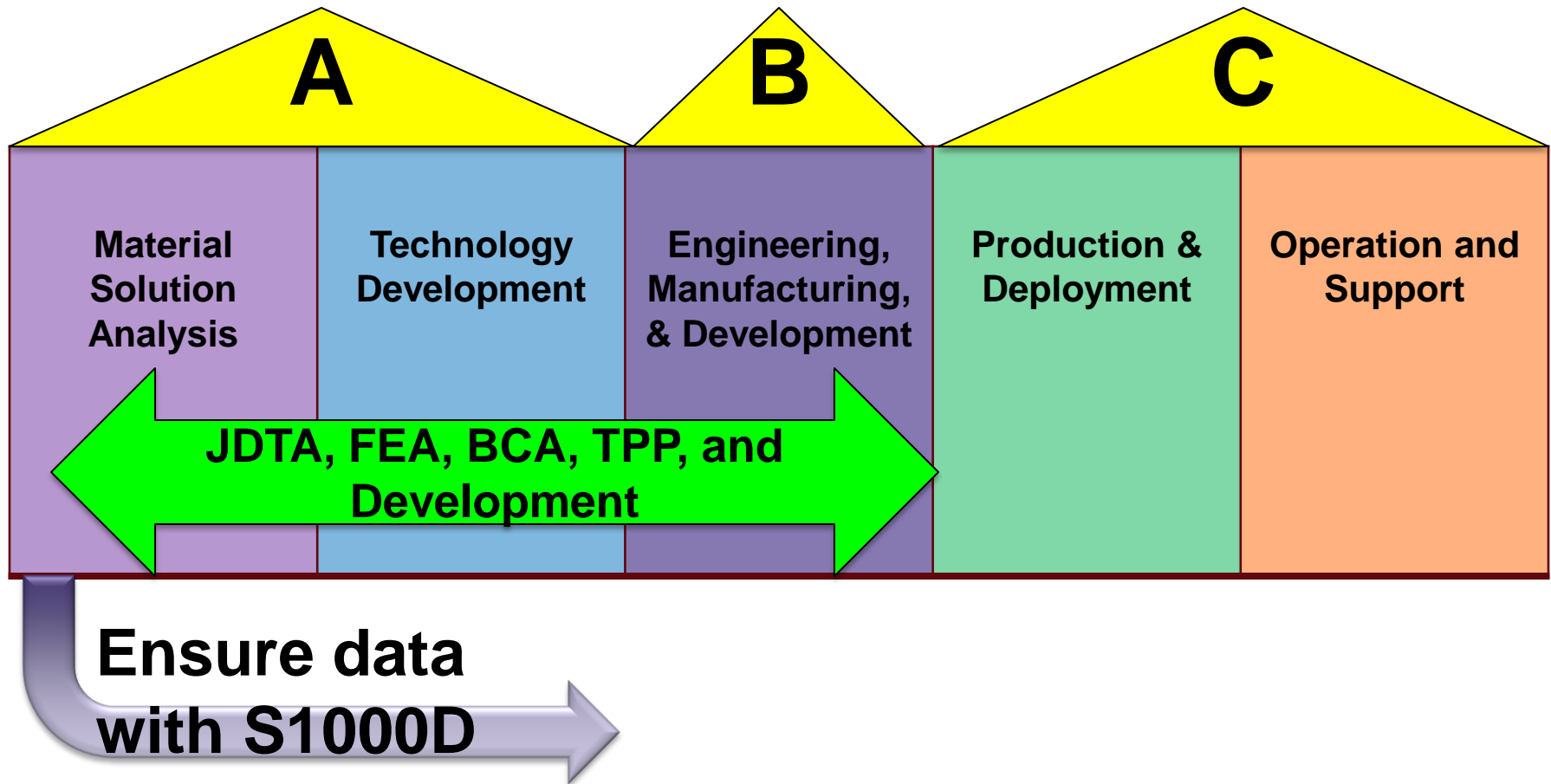




# **How does the Bridge CONOPS influence instructional design strategies?**

- **During initial analysis and development**
- **During post-validation revisions**
- **During surveillance and maintenance**

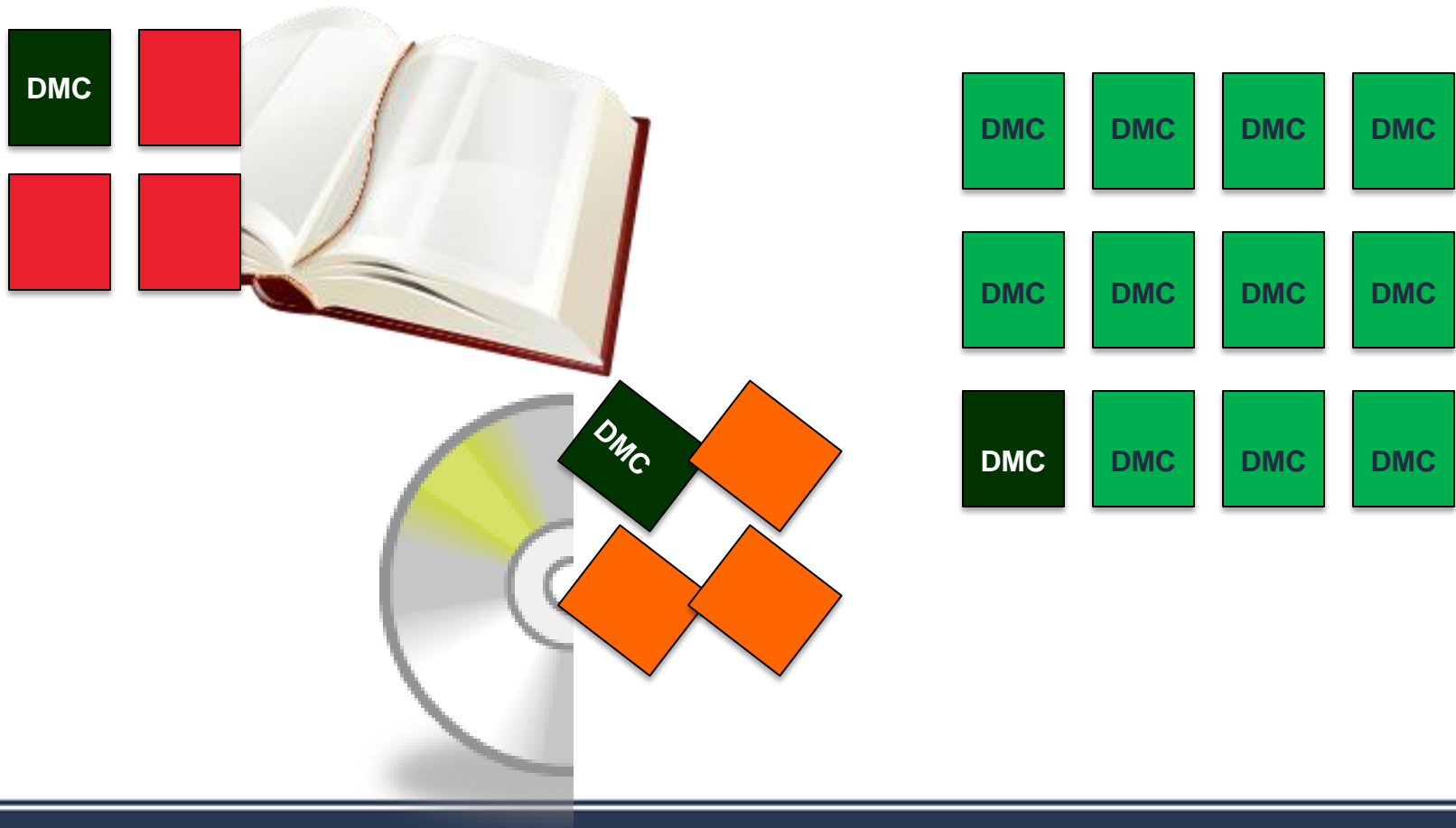
Existing Integrated Defense Acquisition, Technology,  
and Logistics Life Cycle Management System ... *still applies!*



Existing content identification system ... *still applies with minor changes!*

**S1000D Data Module Code (Asset File Name)**

YY	Y	YY	YY	YY	YYY	YYYY	Y	YYYC
----	---	----	----	----	-----	------	---	------



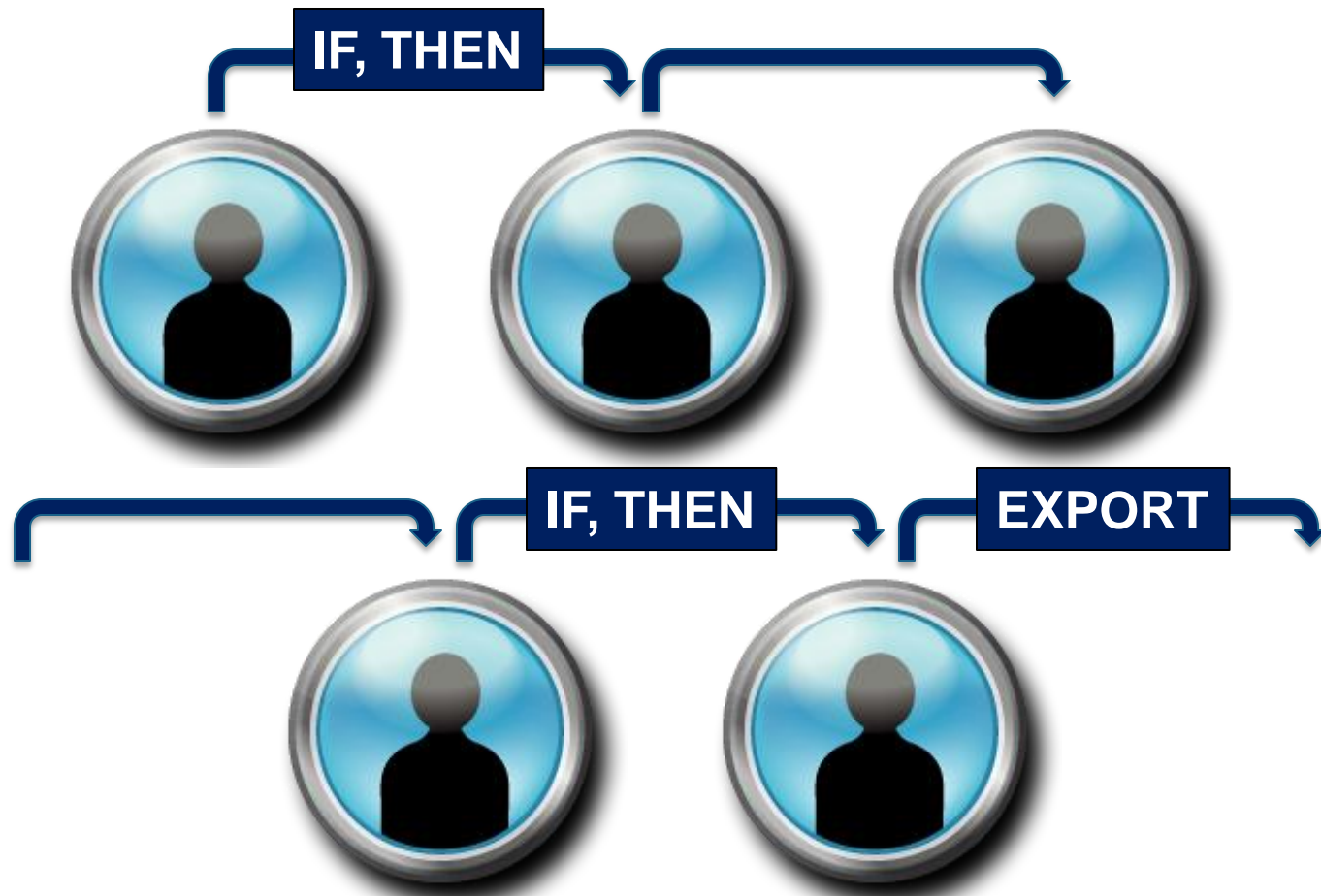
Existing content identification system ... *still applies with minor changes! Harmonization Impacts: S1000D includes the Learning Object Metadata (LOM)*

S1000D™ Issue 4.0 example, Chap 7.5.4

### Metadata

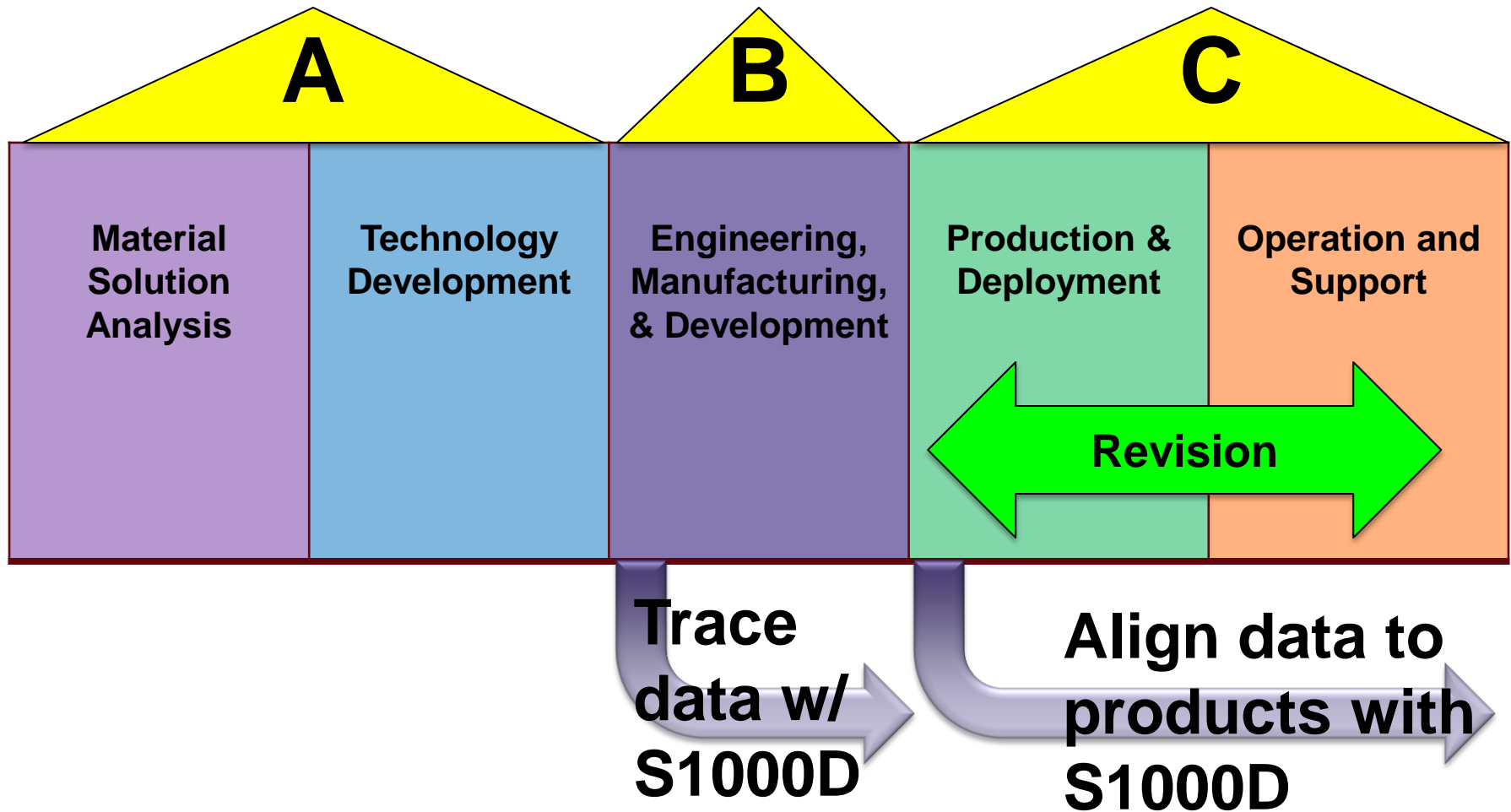
```
<lom:description>  
<lom:string>Air vehicle maintenance training - Landing gear  
system</lom:string>  
</lom:description> <lom:keyword>  
<lom:string>Air vehicle maintenance training</lom:string>  
<lom:string> Landing gear system </lom:string>  
<lom:string>Retraction and extension function test</lom:string>  
</lom:keyword>
```

Existing Team, Workflow, and Business Rules ... *still apply with minor changes!*

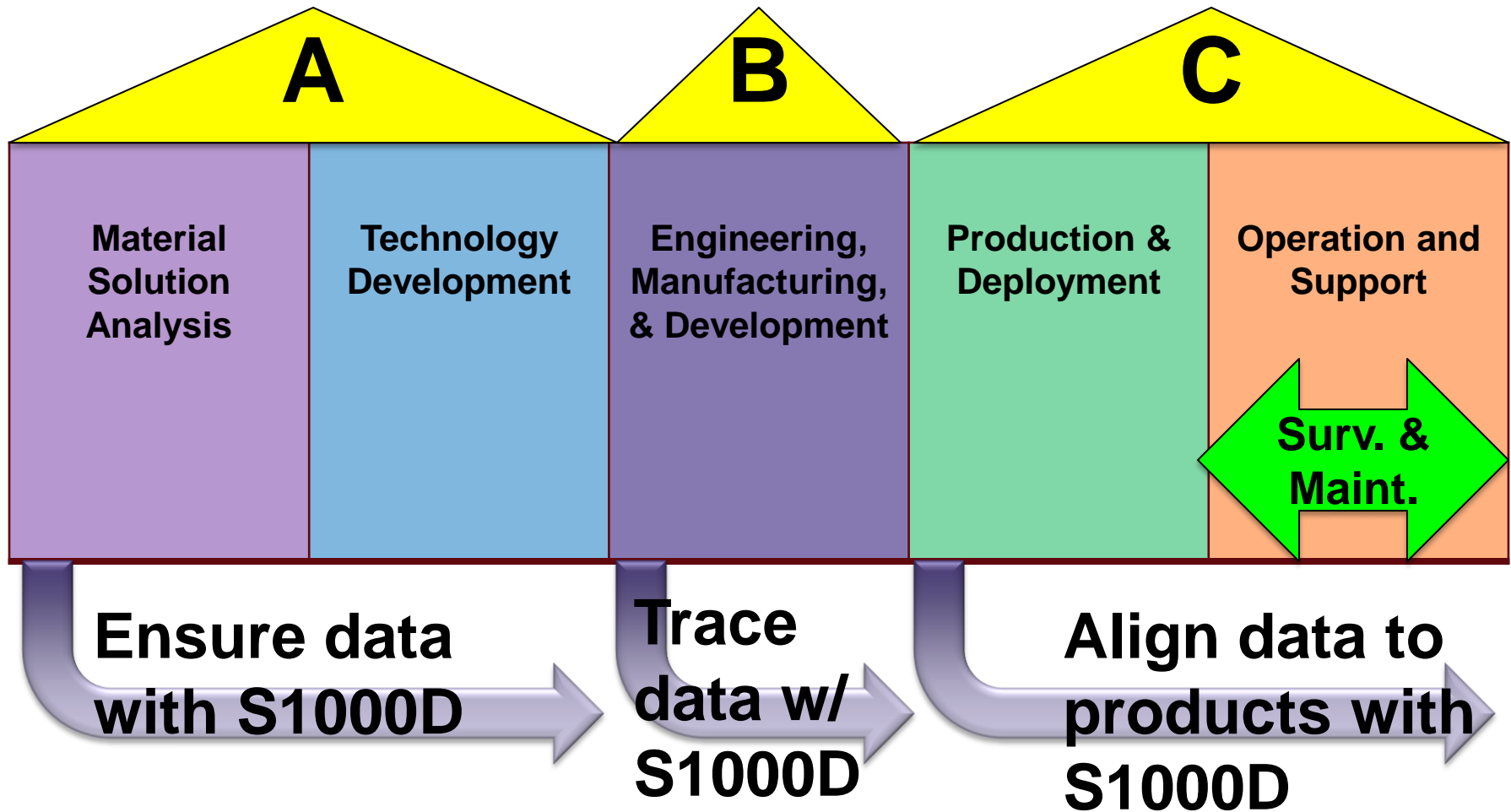


New cross functional team that supports training and tech docs

Existing Integrated Defense Acquisition, Technology,  
and Logistics Life Cycle Management System ... *still applies!*



Existing Integrated Defense Acquisition, Technology,  
and Logistics Life Cycle Management System ... *still applies!*



# **What the Bridge CONOPS resolves for instructional design:**

- **Curriculum managed in small modules outside of SCORM**
- **Curriculum linked to equipment, technical publications in a CSDB**
- **Curriculum linked to planning and analysis documents in a CSDB**
- **Curriculum tailored to the user and conditions**

***This leads to ...***



# **End result of implementing Bridge CONOPS:**

- **Human intervention focused on intelligent work**
- **Content is:**
  - **Readily available**
  - **Readily accessible**
  - **Readily customizable**

**..... to support the front line!**

# Summary

- **Maintenance and operational DLC is a majority of DLC for Navy**
- **OSD policies do not provide specific enterprise implementation guidance but do consider training as part of technical data packages**
- **Bridge Project makes attempt to support DLC in enterprise environment**
- **CONOPS needed to guide integrated DLC business practices**
- **ISD processes largely remain the same, yet better content linking, management and granular design is possible with S1000D.**

**Thanks!**

**Q & A**